

The Leaders in Software Forensics



COMPANY HISTORY & BACKGROUND SUMMARY

proServices, a New Jersey Corporation, provides a Software Forensics Capability in the area of source code inspection services for Fortune 100 Companies and for the Federal Government. The company was founded to leverage its domain expertise in Software Development Manufacturing Processes, Methods and Commercial Automation Tools. This domain expertise is provided as a Strategic and Tactical Software Quality Risk Mitigation Service for new and existing software systems. We have been scrubbing our customer's software and providing valuable information for fifteen years. A partial list of customers have included AT&T, General Electric, Lockheed Martin, Raytheon, Hughes, Lucent, Motorola, EDS, Solomon Smith Barney, Goldman Sachs, NSA, U.S. Army, U.S. Navy—NAVAIR, NAVSEA, Federal Reserve and NASA.

Although functional domain expertise is not a requirement for this capability proServices has worked on a wide range of diverse systems. To name a few:

- Command & Control
- Tactical Communications
- Precision Guided Munitions
- Air Platforms
- Threat Countermeasure Systems
- Satellite Systems
- Intelligence
- Business Systems, etc...

SERVICE CAPABILITIES

A GENERAL PHYSICAL FOR YOUR SOFTWARE

<u>Quality Assessment & Audit</u> - This service represents a broad and general analysis of software quality indicators and attributes including but not limited to defensive programming, inspection attributes, structural metrics, code completeness, complexity, security, etc... In addition, a statistical defect analysis of instances is performed.

"HELP ME FIND THE BUGS"

<u>Error Detection</u> - This service consists of searching through source code for coding constructs suspected of being high priority bugs or violating important coding practices. The problem/issues found are categorized by severity and importance.

"MAKE IT RUN FASTER"

<u>Performance Tuning</u> - This service identifies modifications in the software application which improve the performance and response times. Recommendations are made based upon high value modifications with minimal architectural impacts.

"STOP IT FROM CRASHING!"

<u>Memory Leak Detection</u> – This service identifies overall machine performance degradation and crashes from running out of resources caused by memory leaks.

"WHY ARE MY TESTS NOT CATCHING THESE ERRORS?"

<u>Testing Coverage Analysis</u> – This service maps the customer's current inventory of tests to the percentage of the software system's source code it covers and identifies redundancy and insufficient testing.

"MY PROGRAM HAS UNIQUE SOFTWARE REQUIREMENTS"

<u>Custom Software Standards Assessment</u> - This service identifies a system's compliance to custom standards either created by customers, industry or Government authorities.

"CAN MY SYSTEM BE EXPLOITED?"

<u>Software Threat Detection</u> – This service consists of searching through source code for constructs (malicious code, trojan horses, time-bombs, etc...) which could potentially create opportunities for malicious exploitation in security of the system. proServices is the leading service capability within DOD to forensically analyze source code for vulnerabilities.

"NEED HELP GETTING OUR NETWORTHINESS AUTHORIZATION TO OPERATE (ATO)"

Networthiness Assessment & Audit – This service assesses a system's compliance to the published DISA Security Technical Implementation Guides (STIGS).

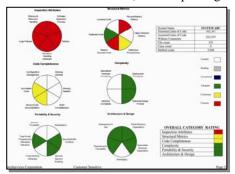
"NOTHING WE HAVE TRIED IS WORKING TO FIX QUALITY PROBLEMS!"

<u>2nd Order Analysis</u> – This service is a process of which source code is analyzed using highly customized scripts, tools and techniques to find root cause failure constructs hard to identify using traditional code inspection processes.



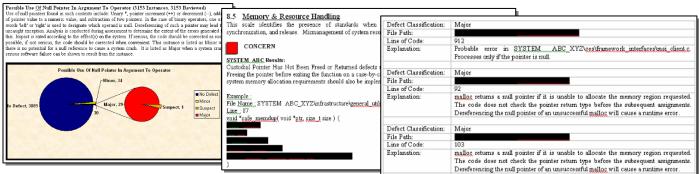
SERVICES DELIVERABLES

Executive ScoreCard Summary - The Executive Scorecard Summary Report is designed for Management to quickly assimilate data from proServices' technical report through graphics and comparative statistical information. In addition to the comparative analysis, the Scorecard Report offers a summation of the data and Software Manufacturing Process Improvements which prevent errors and other deficiencies. This report provides effective analysis of software project "Quality Measurement" for management and senior executives. (See Sample Pages Below)



CODE INSPECTION RESULTS										
	Instances	Major	Suspect	Minor	Bad Style	No Defect	Informational	Nuesse Assesse		
PECTION ATTRIBUTES										
Defects: Possible Use Of Null Pointer In Argument To Operator	3153	29	1	34	. 0	3089	0	100		
Defects: Potential Null Pointer, Dereferenced, Passed or Stored	2758	124	0	0.	2130	470	34	100		
Defects: Expert Analysis	1396	- 6	3	2	0	1385	0	100		
Defects: Loss Of Precision (Less Than Integer Context)	392	0	. 1	1	45	345	0	100		
Defects: Possible Access Of Out-Of-Bounds Pointer By Operator	99	0	1.	0	63	35	0	100		
Befeets: Auto Variable Was Used Uninitialized	75	- 8	- 8	29	26	20	8	100		
Defects: While(1) Found	33	.0	0	2	0	31	0	100		
Exception Handling Attributes: Ignoring Return Value Of Symbol	3203	6	0	78	4	3115	0	100		
Logic Failures: Unreachable Statement	1108	0	0	21	3	1084	0	100		
Logic Fallurese Surpicious Use Of Semicolon (";") After "While" Or Within A "For-Loop"	97	0	2	0		95	0	100		
Memory & Resource Handling: Custodial Pointer Has Not Been Freed Or Returned	95	0	0	42	. 5	48		100		
Defects: Loss Of Procision (Float Context)	3427	- 0	0	0	1210	2217	0	100		
Defects: Type Mismatch Across an Assignment	2475	- 0	0	0	. 0	2475	.0	100		
Defects: Shift Left Of Signed Quantity (let)	41	0	0	0.	41	. 0	0	100		
Exception Handling Attributes: Switch Statement Has No Default	234	0	0	0	234		0	100		
Legic Failures: Case Fall Though	23	9	9	9	2	21	9	190		
Lagic Failures: Dangling If- Construct Of The Form If (E);	2	0	0	0	0	2	0	100		
Memory & Resource Handling: Dynamic Memory Allocation Detected	1495	0	0	0.	0	3	1492	100		
Memory & Resource Handling: Dynamic Memory Deallocation Detected	563	0	0	0	. 0	112	451	. 100		

Detailed Technical Report - proServices provides a complete summation report of all findings and recommendations. This report contains a Source Code Analysis Review containing defect or issue analysis of individual instances and overall qualitative indicators per the scope of the service as identified in the software. It also provides recommendations for practical software development process improvements and describe solutions resulting from the Source Code Inspection Services performed in Immediate/Near, Mid and Long-term perspectives. (See Sample Pages Below)



Electronic-Defect Report(s) – proServices will deliver all of the above reports electronically including all of the Raw Data files resulting from proServices' analysis. The Defect reports will be supplied in two (2) formats, a .CSV (comma separated value) and a .xls (Microsoft Excel Spreadsheet). The .xls report will be delivered with "Macros" so program engineers can rapidly navigate from the defects to the actual source code using a code editor program. (See Sample Page Below)

В	С	D	E	F		
1 FileName	Line	Category	Classification	Comprento		
2 ABC_XYZ\ceim_v10.2_erc\otk.c	18497	Expert Analysis	Mejor	See Dafecte section and appendix of the project report.		
3 ABC XYZ\infreetructure\otk lib\ntk lib.c	4932	Expert Analysis	Mejor	MEMORY LEAK: Pointer trappt is malloc'ad in line 4662 and then		
4 ABC XYZvyzklete peree.c	1737	Expert Analysis	Mejor	NULL Reference Potential See the Defects subsection under Inspe		
5 ABC XYZ\cee\redice model.c	299	Expert Analysis	Mejor	NULL Reference Potential Failure to check for null return after line		
S ABC XYZ\cee\ibe\fperse ellc	101	Expert Analysis	Mejor	NULL DETECTION CE See line SE where I could be null. Dereier		
7 ABC XYZ\celm v10.2 erc\elmvlew otk.c	18481	Expert Analysis	Mejor	See Dafecte section and appendix of the project report.		
8 ABC XYZ\celm v10.2 erc\cul otk 3.C.c	23430	Ignoring Return Value Of Symbol	Melor	The return value of Lock file() should be examined and dealt with.		
9 ADC XYZ\ceim v10.2 erc\file browsec.c	024	Ignoing Return Value Of Bymbol	Mejor	The return value of Lock file() should be exemined and dealt with.		
ABC XYZvocim v10.2 crolotik lib\flo browcor etk.o		Ignoring Return Value Of Bymbol	Mejor	The return value of Look file() should be examined one dealt with.		
11 ABC XYZucyzkrej client.c	104	Ignoring Return Value Of Symbol	Mejor	The return value of ret connection pard should be examined and		
2 ABC XYZ\cee\framework interfaces\nrei client.c	136	Ignoring Return Value Of Symbol	Meior	The return value of ret connection pend should be examined and		
3 ABC XYZ\ceim v10.2 erctwnfreme\w9a.c	4816	Ignoring Return Value Of Symbol	Meior	The return value of ReadOpjectGeometries() should be exemined a		
4 ABC XYZ\ceim v10.2 erc\common eube.c	3174	Fossible Use Of Null Pointer in Argument To Operator	Meior	The pointer may contain a nul; causing a cresh. The earns prober		
5 ABC XYZ\cee\redio model wnw.c	222	Fassible Use Of Null Pointer in Argument To Operator	Meior	malloc returns a null pointer if it is unable to allocate the memory r		
G ABC XYZ\ceim v10.2 erc\otk B\is.c		Fassible Use Of Null Pointer in Argument To Operator		Derefencing a null pointer may cause an abort. Similarly; in this p		
/ AEC XYAcem v1U2 erclotk lib/tser otk.c		Feeable Use Of Null Pointer in Argument To Operator		Null pointer caulé ceuse problem. Similer enamailise ere postene		
B ABC XYZ\cee\redios model.c	218	Feedble Use Of Null Pointer in Argument To Operator	Melor	malioc returns a null painter if it is unable to allocate the memory r		
ADC XYZ\coo\redio model orw.c	207	Feesible Use Of Null Pointer In Argument To Operator	Mejor	callog returns a sull pointer if it is unable to a locate the memory re		
0 ABC XYZ\ooo\libe\ooo lib2.o	667	Faceible Use Of Null Pointer in Argument To Operator	Meior	roallog roturns a null peintor if it is unable to allocate the mornory i		
1 ABC XYZ\cee\enterns.c		Fossible Use Of Null Pointer in Argument To Operator		malloc returns a null pointer if it is unable to ellocate the marsony r		
2 ABC XYZ\csim v10.2 src\common subs.c		Fassible Use Of Null Pointer in Argument To Operator		Could cause a major problem when not checked for a null value an		
3 ABC XYZ\cee\ibs\enc lib2 c		Fessible Use Of Null Pointer in Argument To Operator		c new0 cells celloc) which returns a null spinter if it is unable to a		
4 ABC XYZ\cee\ibs\ce.c		Fessible Use Of Null Pointer in Argument To Operator		malloc returns e null pointer if it is unable to ellocate the memory of		
5 ABC XYZ\cee\scenerio rsecer.:		Fassible Use Of Null Pointer in Argument To Operator		Kindetr could be null at line 236. It is not checked for null before it		
6 ABC XYZvnodel jeir.c		Fassible Use Of Null Pointer in Argument To Operator		netiter will be NULL at the completion of the loop at lint 104		
/ ALC XYAcceVibsVibias		Hospital Use Of Null Pointer in Argument To Operator		c newU celle pelloc') which returns a null opinter if it is unable to a		
B ABC XYZ\cee\redics model.c		Fessible Use Of Null Pointer in Argument To Operator		calloc returns a sull pointer if it is unable to a locate the memory re		
ADC XYZkomVibaVibZ.c		Fessible Use Of Null Pointer In Argument To Operator		c new0 calls calloc) which returns a null spinter if it is unable to		
0 ABC XYZ\coo\redies model.c		Feedble Use Of Null Pointer in Argument To Operator		malloc rotume a null printer if it is unable to allocate the money o		
1 ABC XYZ\cee\ibs\general utils.c		Fossible Use Of Null Pointer In Argument To Operator		realloc returns a null painter if it is unable to allocate the memory r		
2 ABC XYZvzsim v10.2 arctitVd.c		Fossible Use Of Null Pointer in Argument To Operator		The pointer may contain a nul; causing a crash. The same prober		
2 AD: 1073		Consider the Office Paints in Assumed To Consider		ated a stress scientist and be sell. The scientist and		

CONTACT INFORMATION

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